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TI Processing of spent brewers' yeast for food use  
AU Dwivedi, B K; Gibson, D L  
AV DNAL (TP368.C3)  
SO Can Inst Food Technol J, July 1970 Vol. 3, No. 3, pp. 110-112.  
DT Journal; Article  
LA English

Liquid brewers yeast in swine feeding. New method of treatment  
AU Witting, R.; Wiesche, H.  
CS Landwirtsch. Versuchsstn., BASF A.-G., Limburgerhof, Ger.  
SO Brauwelt (1976), 116(31), 1010-12

*agl-TP368.C3*

TI Yeasts and yeast derivatives: definitions, characteristics, and processing.  
AU Dziezak, J.D.  
AV DNAL (389.8 F7398)  
SO Food technology, Feb 1987. Vol. 41, No. 2. p. 104-121 (not consecutive)  
ill., charts  
Publisher: Chicago, Ill. : Institute of Food Technologists.

Estimation of coenzyme I through the uptake of oxygen  
AU Krishnan, P. S.  
CS Cornell Univ., Ithaca, NY  
SO Science (1947), 105, 295  
DT

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# THE SCIENCE OF YEAST

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# I. THE STORY OF YEAST

## 1. HISTORY

Man used yeast before he knew how to write. Hieroglyphics suggest that the ancient Egyptian civilizations were using living yeast and the process of fermentation to rise their bread over 5,000 years ago. Of course, they didn't know what was responsible for the leavening process. The chemical action of yeast that causes dough to rise is known as fermentation and was probably looked upon by early man as a mysterious and unreal phenomenon. It is believed that since early times, mixtures of leavening for bread making were formed by natural contaminants of the flour such as: wild yeast and lactobacilli (organisms also present in milk). Leaven, mentioned in the Bible, was a soft dough-type medium kept from one baking of bread to another. A small portion of this dough was used to start or leaven each new bread dough. Later scientific research found that yeast is a microorganism (visible only with a microscope). The chemical action and growth of yeast that caused the dough to rise then became understandable.

## 2. WHAT IS YEAST

Yeast is a tiny form of fungi scientists call microorganisms. They are egg-shaped cells that can only be seen with a microscope. It takes 20,000,000,000 (twenty billion) to weight one gram or 1/28 of an ounce.

The scientific name for one species of yeast is *SACCHAROMYCES CEREVISIAE* or sugar eating fungus. *Cerevisiae* is the Latin word for brewer. A very long name for such a tiny organism. It is a very strong strain that is capable of fermentation or causing bread dough to rise.

Yeast cells digest food to obtain energy for growth. Their favorite food is sugar; sucrose (beet or cane sugar), fructose and glucose (found in honey, molasses, maple syrup and fruit) and maltose (derived from starch in flour). The process, alcoholic fermentation, produces useful end products, carbon dioxide and ethyl alcohol, which are released by the yeast cells into the surrounding liquid. This is how alcoholic drinks are produced from starch containing flours, i.e., barley flour for making beer and wheat, corn or other grains for making whiskey.

Fermentation occurs naturally in nature. For instance, many berries break open in late fall when they are over-ripe and full of sugar. Natural yeast from the air,

so tiny they cannot be seen, lodge on the surface of these berries, which then become fermented and alcoholic.

In commercial fermentation of grape juice for the production of wine, the carbon dioxide

gas escapes from the solution. Evidence of gas can be seen in the heavy foam caps in fermenting wine tanks. In bread baking, when yeast ferments the sugars available from the flour and from added sugar, the carbon dioxide gas cannot escape because the dough is elastic and stretchable. Therefore, the dough inflates as a result of the expanding gas. Thus, the term yeast-leavened breads came into the vocabulary of the world of baking.

### **3. WHAT IS BREWER'S YEAST**

Brewer's Yeast is a dried inactive yeast that has no fermenting power. It is sold for its nutritional qualities as it is very high in at least ten separate B vitamin factors.\* It is a by-product of the brewing industry. After 5 to 10 succeeding beer fermentations, the yeast, due to increasing contamination, loses its viability and activity and is no longer acceptable for making beer. The yeast then becomes surplus and can be used for the production of food flavors or in feed formulations or as nutritional yeast food.

Over the years the term Brewer's Yeast has become generic. Primarily grown baker's yeast (not a by-product of the same yeast used by bakers to make bread) is often sold as Brewer's yeast because the term is familiar to the consumer. The processing and drying of this yeast is carefully controlled so it remains inactive making it easily digestible and yielding valuable amounts of the B complex vitamins and protein for assimilation.

Another form of Brewer's yeast is labeled as DEBITTERED Brewer's yeast (the bitter hops flavor is neutralized) is almost certain to be brewer's yeast. A product just labeled as brewer's yeast may be brewer's yeast, or it may be inactive baker's yeast. There are no standards for that particular label.

#### **\*TEN SEPARATE B FACTORS:**

Thiamine  
Riboflavin  
Niacin  
Pyridoxine  
Pantothenic Acid  
Biotin  
Choline  
Inositol  
Folic Acid  
Paraminobenzoic Acid

### **5. TYPES OF YEAST**

#### **BAKER'S COMPRESSED YEAST**

This yeast is sold to the commercial and retail bakers throughout the United States. It comes in one pound and five pound cakes and crumbled fifty pound bags. In order to